

Old Colony Planning Council

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TECHNICAL MEMORANDUM

Date: April 30, 2018

To: Michaela Shoemaker, Associate Planner

From: Charles Kilmer, AICP, Assistant Director / Transportation Program Manager *ck*

Subject: Broadway Traffic Study

Per the Town's request, the Old Colony Planning Council has completed an assessment of traffic conditions on Broadway, with specific focus on the intersections of Broadway at Cross Street and Broadway at Water Street. This traffic study was completed through the Old Colony Metropolitan Planning Organization's Local Highway Technical Assistance Program.

Traffic Volumes, Prevailing Speeds, and Heavy Vehicles

Traffic counts were conducted using automatic traffic recorders on the approaches to the Broadway at Cross Street and Broadway at Water Street intersections from October 30th through November 3rd of 2017. Table 1 summarizes the results of this data collection.

Table 1: Existing Traffic Volumes, Speeds, and Percentage of Heavy Vehicles

Location	Average Weekday Volume	Speed Limit	85th percentile Speed	% heavy Vehicles
Broadway, West of Cross Street	3,784	30 MPH	41 MPH	13.0%
Broadway, East of Cross Street	6,004	30 MPH	43 MPH	16.0%
Broadway, East of Water Street	5,989	30 MPH	44 MPH	9.4%
Cross Street, North of Broadway	3,788	35 MPH	43 MPH	12.1%
State Street, South of Broadway	3,489	35 MPH	40 MPH	12.1%
Water Street, South of Broadway	640	35 MPH	42 MPH	5.9%

Intersection Traffic Operations

Manual turning movement counts were conducted at each intersection in order to calculate the level of service for the side street approaches of Cross Street and Water Street. Table 2 summarizes the results of the level of service analyses at each intersection. Traffic from Cross Street experiences moderate levels of delay at the Broadway at Cross Street intersection during the peak demand afternoon hour (4:15 – 5:15 PM). Sight line issues contributed to this delay.

Table 2: Existing levels of Service

Intersection	AM Peak LOS	PM Peak LOS
Broadway at Cross Street	B/C	B/D
Broadway at Water Street	B	B

MUTCD Warrants

The Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD) prescribes warrants that existing conditions at an intersection should be satisfied for consideration of installing a traffic signal control or all-way stop sign control. The satisfaction of any single all-way stop control or traffic signal warrant does not in itself require the installation of said traffic control.

Existing conditions at the intersection of Broadway at Cross Street satisfy warrants for both an all-way stop sign control application and traffic signals, while conditions at Broadway and Water Street do not satisfy warrants for either.

Improvement Options

The Town may consider the installation of a roundabout at either intersection to reduce delay and improve safety, and may also consider an all-way STOP sign control (4-Way STOP) or installation of a traffic signal at the intersection of Broadway at Cross Street. Table 3 summarizes existing delay conditions, and projected delay with available options for intersection improvement.

Table 3: Existing Levels of Service and Conceptual Levels of Service with Improvements

Intersection	Existing Levels of Service		Projected 2023 Levels of Service					
			With All-Way Stop		With Traffic Signal		With Roundabout	
	AM Peak LOS	PM Peak LOS	AM Peak LOS	PM Peak LOS	AM Peak LOS	PM Peak LOS	AM Peak LOS	PM Peak LOS
Broadway at Cross Street	B/C	B/D	B	B	A	B	A	A
Broadway at Water Street	B	B	Not Warranted				A	A

Visibility and safety at both intersections can be improved in the near term with the installation of MUTCD compliant retroreflective intersection advanced warning signs on Broadway (W2-1 for Broadway at Cross Street and W2-2 for Broadway at Water Street) and "STOP ahead" advanced warning signs (W3-1) on Cross Street and Water Street. The "STOP" signs on Cross Street and Water Street can be replaced with retroreflective signs and posts.



Figure 1: MUTCD Sign
W2-1 Intersection
Advanced Warning
Sign



Figure 2: MUTCD Sign
W2-2 Intersection
Advanced Warning
Sign



Figure 3: MUTCD Sign
W3-1 STOP Ahead
Advanced Warning
Sign

Recorded travel speeds on Broadway were observed to be significantly above the posted speed limit. Speed management through a combination of regular traffic enforcement by the police department and the use of vehicle activated speed trailers can improve safety along the roadway and at its intersections.

Should you have any questions about this traffic study or should the Town of Hanover require additional technical assistance, please contact Bill McNulty at wmcnulty@ocpcrpa.org.

Attachments

- A. Recorded Traffic Data for Broadway, Cross Street, and Water Street
- B. Turning Movement Counts for Broadway at Cross Street and Broadway at Water Street
- C. Level of Service Reports for Broadway at Cross Street and Broadway at Water Street
- D. Warrant Analysis Reports for Broadway at Cross Street and Broadway at Water Street

Cc:

Mr. Joseph Colangelo, Town Manager, Town of Hanover
Chief Walter L. Sweeney, Hanover Police Department
Mr. Victor Diniak, Director, Hanover Department of Public Works
Mr. David R. Delaney, Chairperson, Hanover Board of Selectmen
Ms. Mary-Joe Perry, District Highway Director, MassDOT District Five
Mr. Derek Krevat, MassDOT Office of Transportation Planning, Old Colony MPO Liaison
Mr. Nelson Hoffman, Program Development Team Leader, Federal Highway Administration